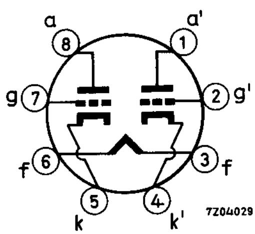
S.Q. TUBE

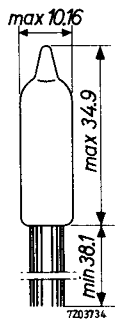
Special quality double triode designed for use as amplifier mixer and oscillator.

QUICK REFERENCE DATA			
Life test	1000 hours		
Mechanical quality	Shock and vibration resistant		
Base	Subminiature		
Heating	Indirect A.C. or D.C.; parallel supply		
Heater voltage	V_f	6.3	V
Heater current	I_f	300	mA
Anode current	I_a	8.5	mA
Mutual conductance	S	5	mA/V

DIMENSIONS AND CONNECTIONS

Dimensions in mm





The leads should not be soldered nearer than 5 mm to the seal and should not be bent nearer than 1.5 mm to the seal.

CHARACTERISTICS (Each system if applicable)

Column I Nominal values or setting of the tube
II Range values for equipment design: Initial spread
III Range values for equipment design: End of life

		I	II	III	
Heater voltage	V_f	6.3			V
Heater current	I_f	300	280 - 320		mA
Anode voltage	V_a	100			V
Grid voltage	$-V_g$	1.9			V
Anode current	I_a	8.5			mA
Mutual conductance	S	5			mA/V
Amplification factor	μ	20	17 - 23		
Internal resistance	R_i	4			kΩ
Anode voltage	V_a	100			V
Cathode resistor	R_k	220			Ω
Anode current	I_a	8.5	6.0 - 11		mA
Difference in anode current of two sections	$\lvert I_a - I_a' \rvert$		max. 2		mA
Mutual conductance	S	5	4.1 - 5.9	min. 3.5	mA/V
Negative grid current	$-I_g$		max. 0.3	max. 1.0	μA
Cut-off voltage	$-V_g$	9			V
Anode voltage	V_a	100			V
Anode current	I_a		max. 100		μA
Leakage current between cathode and heater	I_{kf}		max. 5	max. 10	μA

Voltage between cathode and heater V_{kf} = 100 V

CHARACTERISTICS (continued)

		I	II	
Vibrational noise output	V_o		max. 50	mV_{RMS}
Anode supply voltage V_{ba} = 100 V				
Cathode resistor R_k = 220 Ω				
Anode resistor R_a = 10 kΩ				
Grid resistor R_g = 0.1 MΩ				
Cathode by-pass capacitor C_k = 1000 μF				
Vibration frequency = 50 Hz				
Acceleration = 15 g				

CAPACITANCES

		I	II	
Anode to cathode and heater	$C_{a/kf}$	0.28	0.2-0.36	pF
	$C_{a'/k'f}$	0.32	0.22-0.42	pF
Grid to cathode and heater	$C_{g/kf}$	1.9	1.4- 2.4	pF
Anode to grid	C_{ag}	1.5	1.2- 1.8	pF
Grid to grid other section	$C_{gg'}$		max. 13.0	mpF
Anode to anode other section	$C_{aa'}$		max. 0.5	pF

SHOCK AND VIBRATION RESISTANCE

The following test conditions are applied to assess the mechanical quality of the tube. These conditions are not intended to be used as normal operating conditions.

Shock

The tube is subjected 5 times in each of 4 positions to an acceleration of 500 g supplied by an NRL shock machine with the hammer lifted over an angle of 30°.

Vibration

The tube is subjceted during 32 hours in each of 3 positions to a vibration frequency of 50 Hz with an acceleration of 2.5 g.

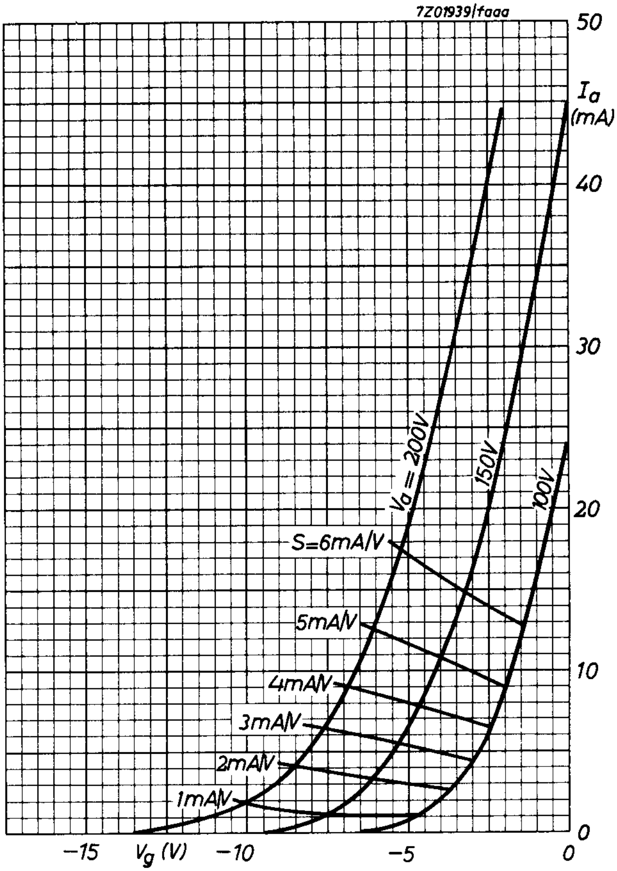
LIFE

Production samples are tested to be within the end of life values (column III) under the following conditions during 1000 hours.

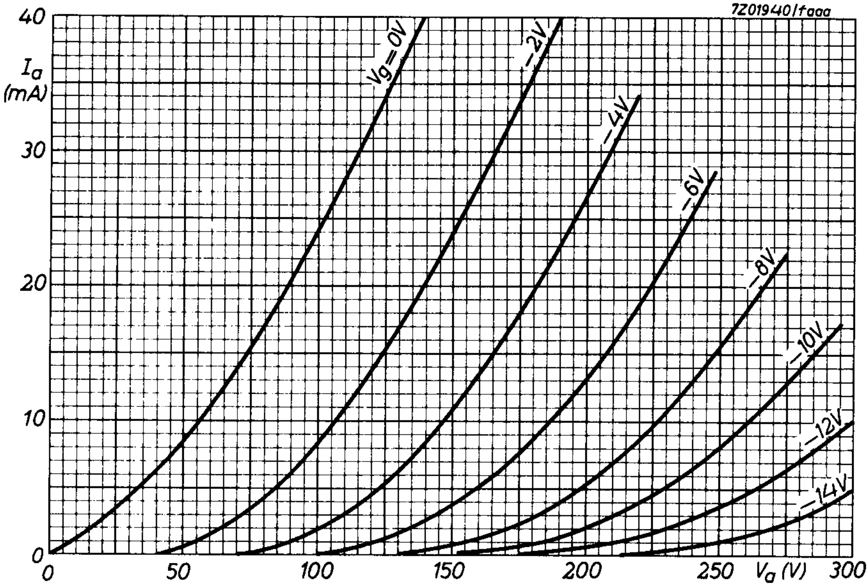
Anode voltage	V_a	100	V
Cathode resistor	R_k	220	Ω

LIMITING VALUES (Absolute max. rating system)

Anode voltage	V_{a_o}	max.	330	V
	V_a	max.	165	V
Grid voltage	$+V_g$	max.	0	V
	$-V_g$	max.	55	V
Grid current	I_g	max.	5.5	mA
Anode dissipation	W_a	max.	1.1	W
Cathode current	I_k	max.	22	mA
Peak voltage between cathode and heater	V_{kf_p}	max.	200	V
Grid resistor	R_g	max.	1	MΩ
Bulb temperature	t_{bulb}	max.	220	^oC



7Z01939/faaa
50
I_a (mA)
40
30
20
10
0
$V_a = 200V$
150V
100V
S=6mA/V
5mA/V
4mA/V
3mA/V
2mA/V
1mA/V
−15
V_g (V)
−10
−5
0


7Z01940/faaa
40
I_a
(mA)
30
20
10
0
0
50
100
150
200
250
V_a (V)
300
Vg=0V
−2V
−4V
−6V
−8V
−10V
−12V
−14V

PHILIPS

Data handbook

Electronic components and materials

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